Expanding Earth

"The Church says the Earth is flat. But I know that it is round. For I have seen the shadow on the Moon. And I have more faith in a shadow than in the Church."
- Magellan -

Over the centuries we have been taught a lot of things about the Earth, many of which we have come to find out are totally false. Clearly the Earth is not flat, as we have all seen quite plainly in recent times courtesy of various space probes, satellites, and photographs from several space stations. But are there other things we commonly believe about the Earth that just may not be true?

There are some things about the Earth that we have come to accept that we don't even realize are of fairly recent origin and are very much unproven. One of these is the operation of plate tectonics.

It is possible that every grade school youngster has noted how well the eastern coastline of South America fits with the western coastline of Africa. In 1915 Alfred Wegener proposed his theory of "continental drift" to explain how the continents would indeed fit together like a jig saw puzzle at some time in the past and are now separated by significant distances. Paleontologists had also noted that identical creatures somehow found themselves separated by oceans where there was no rational explanation for their migration across oceanic distances. So the explanation of plate tectonic movement to explain this has become widely accepted. However, there is a problem.

The theory of continental drift as it exists today is based upon the movement of tectonic plates with the Earth remaining at a constant size. That is, the Earth's diameter was established billions of years ago and has not changed in any substantive way in the last few hundred million years. As a direct result, for continents to "drift" tectonic plates not only need to move horizontally relative to each other, but there has to be plate subduction as well. Plate subduction says that as one plate is moved into collision with another, one of the two plates is driven under the other (i.e., subducted). This doesn't seem terribly unreasonable until one realizes there is no known mechanism that would cause subduction to work on any large scale. That is, there is nothing about the nature of tectonic plates that would provide sufficient force horizontally to cause one plate to be driven under another one. On the other hand there is an evident force that would cause quite the opposite to occur.

The theory of how planets form essentially says that they coalesce from the dust and debris surrounding a newly formed star. So, billions of years ago the Earth became a clearly identifiable body orbiting the sun as an entity amidst a lot of co-orbiting dust that was also eventually swept up by the Earth. As the our planet grew in size through accumulation of material the pressure exerted by the thousands of miles of material build up along with the original temperatures of the material resulted in high levels of internal heating. Essentially, the squeezing of the Earth heated it up internally. However, over a period of time the Earth was also developing a rather solid shell of cooled and very strong material.

It is commonly believed that the formation of the Earth consists of a molten core of mostly iron, a viscous mantle of various materials, and a crust. It is also widely accepted that the Earth has existed at roughly its present diameter for billions of years. This allows for the fact that even at present there are 1,000 to 5,000 tons of meteoric and cometary debris continuing to add to the Earth on a daily basis. After all, dinosaur bones don't tend to be buried just because the dinosaurs were poor housekeepers. The Earth does indeed still accumulate matter from space although on a fairly limited basis these days.

The idea of the Earth's size being very constant along with continental drift has given rise to an interesting interpretation that flies in the face of physics. The continents do clearly fit together in a way that gives rise to the belief of an original super-continent that Alfred Wegener called Pangea and a single massive sea that he named Panthalassa. However, to achieve this you have to make a lopsided planet (i.e., high density material piled up in on one side, and a massive lower density sea on the other side). Then to get from this situation to the present day, you have to find a mechanism that fractures Pangea and allows it to "float" around the planet causing massive tectonic subduction of early crustal materials. The problem is that the massive subduction zones are missing, but that's only the beginning of the problems.

If we accept the arrangement of Pangea as normally depicted, then the Pacific Ocean must be a remnant of the ancient global sea. If that is the case then the floor of the Pacific Ocean should contain some of the oldest crustal material on the planet. However, exactly the opposite has been demonstrated. Both the Pacific and Atlantic Ocean contain some of the newest surface material on the planet, and they are both growing. This is in complete contradiction to the theory as it presently stands.

Despite the contradictions, the study of plate tectonics has generated a lot of very useful raw data regarding the age of various parts of the Earth. In fact, rather detailed maps have been made that show where we can find the newest parts of the Earth. An internet site that shows some of this can be found at
http://eqseis.geosc.psu.edu/~cammon/HTML/Classes/IntroQuakes/Notes/plate_tect01.html .
While looking through the maps presented there, you can see that not only is South America moving away from Africa, but it is also apparently moving away from Australia. Both the South Pacific and South Atlantic are growing. Not only that, but the Indian Ocean is growing as well. Also, the mid-Atlantic ridge and the Pacific ridge are hot spots. That is, the heat from the interior of the Earth is leaking at these spots to a greater extent than elsewhere. These are thin spots in the insulation of the mantle from the surface.

Maps, such as these, point to an interesting possibility. If all of these areas are growing, and subduction isn't happening, then we are left with the inescapable conclusion that the diameter of the Earth is not only increasing due to accretion (material accumulation from space), but it is also being inflated from inside. No, the Earth is not being blown up like a balloon. Rather, the upwelling material from the mantle has cracked the crust along the various ridges, fills the cracks and is wedging the pieces apart to increase the total surface area of the Earth thereby increasing the size of the Earth.

Is this possible?

One way to see if this is possible would be to make use of crust age maps to simultaneously remove newer material while letting the remaining surface be remapped to a newer and smaller diameter required by the smaller available surface. This process could be continued to slowly regress the Earth to earlier and earlier ages. Neal Adams has done exactly this with not only the Earth, but also with a part of Mars, the Moon, and several other planetary bodies (http://www.nealadams.com/nmu.html). Interestingly, when the Earth is regressed in this manner all of the land masses fit together perfectly with no need for a hemispherical Panthalassa sea. Pangea precisely fits on an Earth that is roughly 60% of the diameter of present day Earth and those portions of present day Earth comprising the seas simply disappear.

An expanding Earth also causes rather dramatic mountain ranges to be created. As the crust is pushed apart and the diameter of the Earth increases, the crust that originally fit the curve of the smaller diameter has to be flattened out to conform to a larger diameter. The underside of the crust is put in tension and the upper surface is put in compression. This leads to fractures (faults), slippage and folding of the crust to achieve the new flatter overall shape.

Whether our planet expands or not doesn't seem terribly important to us at the moment, but what would the consequences have been for the early inhabitants of Earth?

Let's assume for the moment that between the time that the Earth's diameter was 60% of its present diameter and now, that the Earth gained 25% of its present mass from accretion. In this case an early Earth with 75% of its present mass but 60% of its present diameter would have a surface gravity of just over twice what we experience today. Unfortunately, this is in contrast to claims many expanding Earth theorists make regarding an early Earth having lower gravity and using this as an explanation for the size of dinosaurs. The only way for a small (0.6 d) Earth to have even the same gravity as today would be if it was less than 36% of its present mass. The more likely scenario is that when the Earth was small, so were the early life forms on the planet. It was only very late in the age of dinosaurs that the larger beasts roamed the land areas of the planet as gravity approached more modern levels.

Barbara John, a University of Wyoming geologist and one of the co-chief scientists on an expedition to drill down to the boundary between the crust and mantle of the Earth (Moho) said, "Our major result is that we've recovered the lower crust for the first time and have confirmed that the Earth's crust at this locality is more complicated than we thought."

All things considered, maybe the Earth's crust is more complicated everywhere than anyone thought.